

### **REMARKS**

Claims 16-31 are pending in this application. By this Amendment, claims 1-15 are canceled, and new claims 16-31 are added.

No new matter is added to the application by this Amendment. Support for new claims 16-31 can be found within the claims as originally filed and within the specification at, for example, the second full paragraph on page 7, the paragraph bridging pages 7 and 8, the first full paragraph on page 8, the paragraph bridging pages 8 and 9, the last full paragraph on page 9, the paragraph bridging pages 9 and 10, and the first full paragraph on page 10.

Reconsideration of the application is respectfully requested.

#### **I. Allowable Subject Matter**

Applicants note with appreciation that claim 10 would be allowable if rewritten in independent form and to overcome the claim objection as set forth below

#### **II. Claim Objection**

Claims 1-15 were objected to for alleged informalities. Specifically, the Patent Office request that claims 1-15 be correct to remove the phrase "characterized in that" from the claims.

In light of the cancellation of claims 1-15, this objection is moot.

Applicants respectfully request withdrawal of the objection to the claims.

#### **III. Rejection Under 35 U.S.C. §102**

Claims 1-4, 7-9, 11 and 13-15 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by JP 11263143 to Kanazawa et al. (hereinafter

"Kanazawa"). Applicants respectfully disagree.

The Patent Office alleges that Kanazawa teaches each of the features recited in claims 1-15. Applicants respectfully disagree.

In light of the cancelation of claims 1-15, this rejection is moot.

Applicants respectfully request withdrawal of this rejection to the claims.

**IV. Rejection Under 35 U.S.C. §103**

Claims 1-9, 11, 12 and 15 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,463,347 to Seko et al. (hereinafter "Seko") in view of Kanazawa. The rejection is respectfully traversed.

In light of the cancelation of claims 1-15, this rejection is moot.

Applicants respectfully request withdrawal of this rejection to the claims.

**V. New Claims**

Neither Kanazawa nor Seko, taken singly or in combination, teaches or suggests a method that includes determining a first time  $t_1$ , wherein the change in the steering angle ( $\beta$ ) begins at a first time  $t_1$ , determining a second time  $t_2$ , wherein the change in the steering-wheel angle ( $\alpha$ ) begins at the second time  $t_2$  and the second time  $t_2$  follows the first time  $t_1$  and determining a third time  $t_3$ , wherein the vehicle driver starts to bring about compensation by actuation of the steering wheel at the third time  $t_3$  as required in amended claims 16 and 17.

Neither Kanazawa nor Seko, taken singly or in combination, teaches or suggests a method that includes evaluating a gradient of the steering-wheel angle ( $\alpha$ )

during a time interval from the second time  $t_2$  to the third time  $t_3$  for detecting the level of awareness of the vehicle driver as recited in claim 16. Moreover, neither Kanazawa nor Seko, taken singly or in combination, teaches or suggests a method that includes comparing a gradient of the steering-wheel angle ( $\alpha$ ) with a gradient of the steering angle ( $\beta$ ) to detect the level of awareness of the vehicle driver as required in claim 17.

Kanazawa discloses an attention ability judging device for a vehicle to heighten the safety in driving the vehicle by sensing a drop of the driver's attention irrespective of the road surface situation (see Abstract of Kanazawa). Additionally, Kanazawa teaches an attentiveness judgment system which judges attentiveness of a driver who is operating a steering handle based on a detection result of a handle rudder sensor (detecting a rudder angle of a steering handle) and a detection result of a vehicle traveling direction sensor (detecting a direction of movement of vehicles (see paragraph [0013] of the English-language translation of Kanazawa obtained via the JPO website). However, judging the attentiveness of a driver with detection results from a traveling direction sensor and a handle rudder sensor does not teach or suggest detecting awareness of a vehicle drive based on an evaluation of the gradient of the steering-wheel angle ( $\alpha$ ) during a time interval and a comparison of a gradient of the steering-wheel angle ( $\alpha$ ) with a gradient of the steering angle ( $\beta$ ).

The attentiveness judgment system of Kanazawa (1) obtains and stores a traveling direction timing  $T_1$ , a steering timing  $T_2$  and a steering pulse input interval  $T_3$ , and (2) compares the traveling direction timing  $T_1$  with steering timing  $T_2$ . If the direction of the

steering timing  $T_2$  is always behind the traveling direction timing  $T_1$ , it is judged that the driver's attentiveness is declining (see paragraphs [0021]-[0023] of English-language translation of Kanazawa). However, judging the attentiveness of a driver based on whether a steering timing is always behind a traveling direction timing does not teach or suggest detecting awareness of a vehicle drive based on an evaluation of the gradient of the steering-wheel angle ( $\alpha$ ) during a time interval and a comparison of a gradient of the steering-wheel angle ( $\alpha$ ) with a gradient of the steering angle ( $\beta$ ).

Thus, Kanazawa fails to teach or suggest detecting the level of awareness of the vehicle driver by evaluating a gradient of the steering-wheel angle ( $\alpha$ ) during a time interval from the second time  $t_2$  to the third time  $t_3$  as recited in claim 16 and by comparing a gradient of the steering-wheel angle ( $\alpha$ ) with a gradient of the steering angle ( $\beta$ ) as recited in claim 17.

Seko discloses a drowsiness alarm system for a vehicle which gives an alarm to the vehicle driver when detecting a vehicle steering condition such as to indicate a state of drowsiness (see Abstract of Seko). Although Seko concerns detecting the attention level of a vehicle operator, Seko performs such detection by monitoring changes in the angle of the steering wheel of the vehicle. (See col. 1, lines 22-24 and col. 3, lines 34-35 of Seko).

Seko also discloses a positive peak detector operates to hold a local maximum value of the steering angle signal and a negative peak detector operates to hold a local minimum value of the steering angle signal (see col. 3, lines 43-47 of Seko). A differential

amplifier of Seko outputs a difference signal representing the level difference between output signals of the positive and negative peak detectors (see col. 3, lines 56-59 of Seko). A comparator of Seko compares the difference signal (based on the level difference between outputs signals of the positive and negative peak detectors) with a reference voltage (corresponding to a predetermined change of steering angle) and outputs a first pulse signal at the instant the level of the difference signal reaches the level of the reference voltage (see col. 3, lines 6067 of Seko).

Seko discloses a drowsiness alarm system that gives an alarm to the vehicle driver when detecting a vehicle steering condition that is based on a local maximum value and a local minimum value of the steering angle signal detected by the positive and negative peak detectors, respectively. However, detecting drowsiness of a driver based on a vehicle steering condition determined from a local maximum value and a local minimum value does not teach or suggest detecting awareness of a vehicle drive based on an evaluation of the gradient of the steering-wheel angle ( $\alpha$ ) during a time interval and a comparison of a gradient of the steering-wheel angle ( $\alpha$ ) with a gradient of the steering angle ( $\beta$ ).

Thus, Seko fails to teach or suggest detecting the level of awareness of the vehicle driver by evaluating a gradient of the steering-wheel angle ( $\alpha$ ) during a time interval from the second time  $t_2$  to the third time  $t_3$  as recited in claim 16 and by comparing a gradient of the steering-wheel angle ( $\alpha$ ) with a gradient of the steering angle ( $\beta$ ) as recited in claim 17.

Accordingly, claims 16 and 17 are patentable over Kanazawa and Seko, taken singly or in combination.

In addition, independent claims 30 and 31, which claim an apparatus for detecting the attention level of a vehicle operator having limitations corresponding to those of claims 16 and 17, respectively, discussed above, are patentable over Kanazawa and Seko for the same reasons as set forth above with respect to claims 16 and 17.

Further, claims 18-29, which depend directly or indirectly from claims 16 and 17, are also patentable over Kanazawa and Seko for the same reasons as set forth above with respect to claims 16 and 17 and because of the further restrictions they add.

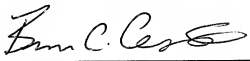
VI. **Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of claims 16-31 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.  
Early and favorable action is earnestly solicited.

Respectfully submitted,

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